Framework for a Re-examination of Stage II of the Falls Nutrient Strategy: Summary

Falls Lake was constructed by the US Army Corps of Engineers in the late 1970s. The designated uses of the project were flood control, water supply, recreation, fish and wildlife enhancement, and continuous water flow to maintain downstream water quality and to support designated uses of the Neuse River. **Designated uses** describe the appropriate and intended ways that people or wildlife may use a waterbody, including lakes, streams and rivers. The entire Falls Lake watershed is also classified as a critical water supply watershed in the Triangle region.

Falls Lake Designated Uses

Drinking Water Supply
Recreation
Fishing
Aquatic Life Survival

The Falls Lake Management Strategy requires two stages of nutrient reduction actions. Stage I requires the attainment of nutrient-related water quality standards in the Lower Falls Reservoir by January 15, 2021. Stage II requires that all areas of Falls Lake achieve the nutrient-related water quality standards.

Falls Lake Reduction Goals

	Stage I	Stage II
↓ Nitrogen	20%	40%
↓ Phosphorus	40%	77%

A set of Consensus Principles were adopted to guide the development of the Falls Lake Nutrient Management Strategy and see if it is possible to meet the designated uses for the Upper Lake. The Consensus Principles also highlight the feasibility of reaching the Stage II reduction goals and meeting the water quality standard for Chlorophyll *a*. The Principles propose an examination of whether existing uses of the Upper Lake can be protected with **alternative water quality standards,** including the designated use and the water quality criteria.

Summary of Initial Re-Examination Findings and Recommendations

Cardno ENTRIX is providing assistance to the Upper Neuse River Basin Association (UNRBA) to determine the best approach to address the nutrient management rule requirements and the Consensus Principles. Based on the evaluation, **the nutrient loading targets for Stage II are *not technically, logistically or financially feasible,*** with cost being a major factor. The Municipal Preliminary Screener tool developed by the U.S. Environmental Protection Agency (USEPA) indicates that the Stage II loading targets will cause a relative "Large Impact" both socially and economically to the communities in the Falls Lake watershed. A "Large Impact" means the cost of complying with the strategy is over 2% of the median household income in the watershed.

Cardno ENTRIX developed options for consideration of the re-examination of the Stage II rules. The re-examination includes a multi-part process using monitoring, analysis, and modeling. This process will serve as the scientific basis for making changes to Stage II of the Falls Lake Nutrient Management Strategy regulations. Changes to the regulations may extend beyond the Falls Lake Nutrient Management Strategy regulations, as described in each option Cardno ENTRIX identified. A combination of options is likely to be used by the UNRBA. The re-examination must be completed prior to the end of 2020, the start of Stage II nutrient management.

Potential Social and Economic Impacts

The Department of Environment and Natural Resources projected a cost of $945 million to implement Stage II. This will require each household in the watershed to contribute approximately $1,400 per year towards nutrient reductions.

Cardno ENTRIX identified the following options for the UNRBA:

1. **Recalculate nutrient reduction targets using a revised or new modeling analysis.** The results of the new or revised modeling will be used to reassess the nutrient reductions needed to meet water quality standards for Falls Lake. The technical and financial feasibility of the revised load reductions will also be reassessed using the more comprehensive financial analysis tools developed by Cardno ENTRIX. The regulations most likely to be modified with this approach are the Falls Lake Nutrient Management Strategy regulations.

Lake & Watershed Monitoring & Modeling Analysis

Additional monitoring and modeling analysis are the first steps to re-examining the Stage II rules.

Photo courtesy of Division of Water Resources

2. **Pursue revised regulations that recognize water level changes above NC Highway 50, or the Upper Lake, due to reservoir operation.** This would allow for separate uses in the Upper Lake and the Lower Lake and the ability to show that the Upper and Lower Lake are each meeting their designated uses. This could be hard to do as it entails a permanent change to the Upper Lake designated uses and a ***Use Attainability Analysis***. The regulations most likely to be modified with this approach are the Falls Lake Nutrient Management Strategy regulations, regulations describing the Designated Uses, and regulations describing the new numeric nutrient criteria.

3. **Pursue a site-specific Chlorophyll *a* standard for the Upper Lake**. Under this option, a new numeric water quality criterion for Chlorophyll *a* that is specific to the Upper Lake would be created. This new criterion would remain protective of the downstream uses of Falls Lake. The regulations most likely to be modified with this approach are the Falls Lake Nutrient Management Strategy regulations and regulations describing the new numeric nutrient criterion.

Cardno ENTRIX also identified another regulatory option that may provide temporary relief to the existing nutrient management strategy. Affected parties can **pursue a temporary exemption from meeting the existing water quality standards, or a water quality variance.** This would allow for more time to develop new, cost-effective technologies or complete one of the Options listed above while removing the regulatory burden for a period of time. Without action on an Option listed above, the existing reduction targets would not be modified.

Potential Schedule for the Re-examination of Stage II

		2013	2014	2015	2016	2017	2018	2019	2020	2021 >>		2036
Complete Nutrient Credit Project	2013-2015	■	■	■								
Implement Stage I Rules	2013-2020	■	■	■	■	■	■	■	■			
Conduct monitoring studies	2013-2017	■	■	■	■	■						
Optional 5th Year monitoring	2018						■					
Preliminary revisions to revised lake nutrient response modeling	2015-2017			■	■	■						
Final revisions to revised lake nutrient response modeling	2018-2019						■	■				
1 . Recalculate loading targets using revised modeling	2016-2020				■	■	■	■	■			
2 . Pursue Revised Regulations (Use Attainability Analysis for Upper Lake)	2013-2020	■	■	■	■	■	■	■	■			
3 . Pursue a site specific Chlorophyll a criteria for the Upper Lake	2017-2020					■	■	■	■			
Apply for a variance for the Upper Lake	2013-2020	■	■	■	■	■	■	■	■			
Implement Stage II Rules	2021-2036									■	■	■